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UNITED STATES DISTRICT COURT

DISTRICT OF OREGON

PORTLAND DIVISION

NATIONAL WILDLIFE FEDERATION, et al.,

Plaintiffs,

v.

NATIONAL MARINE FISHERIES SERVICE, et al.,

Defendants.

Case No.: 3:01-CV-00640-SI

2015 REPLY DECLARATION OF LYNNE KRASNOW, PH.D., NATIONAL MARINE FISHERIES SERVICE, WEST COAST REGION
In support of Federal Defendants' Cross-Motion for Summary Judgment

I, Lynne Krasnow, declare and state as follows:

1. On March 4, 2015, I provided a declaration in this litigation in support of the National Marine Fisheries Service's (NMFS) 2008 Biological Opinion (BiOp) and its 2010 and 2014 Supplemental BiOps for the Federal Columbia River Power System (FCRPS). There I described my qualifications and experience and explained certain technical issues concerning salmonid habitat mitigation actions in the Columbia River estuary that were evaluated in NMFS's BiOps. The issues I discussed in that declaration were raised in declarations prepared for the plaintiffs (NWF) by Mr. Frederick Olney.

2. I have now reviewed a second declaration filed by Mr. Olney (2015 Olney Second Decl.) and provide this reply declaration to respond to the comments and issues he raises in his second declaration.

3. This reply declaration is also based on information provided by and analyses prepared by NMFS's biologists at the Northwest Fisheries Science Center, the U.S. Department of Energy's Pacific Northwest National Laboratory, the U.S. Environmental Protection Agency's Estuary Partnership, and researchers at Oregon State University, Oregon Health Sciences University, and the University of Washington. The purpose of this declaration is to respond to the plaintiffs' declarant, Mr. Fred Olney, and address technical issues concerning the effects on listed salmonids of the offsite mitigation program for estuary habitat required by the 2008 FCRPS BiOp and as reviewed in the 2010 and 2014 FCRPS Supplemental BiOps.

Benefits from the Estuary Habitat Mitigation Program

4. **"On-the-ground" SBUs achieved by the Action Agencies show clear evidence of a ramp-up in 2010-2014**. I included a graph from the Action Agencies' 2013 Comprehensive Evaluation as Figure 2 in my prior declaration (2015 Krasnow Decl.), stating that it provided clear evidence of a ramp-up in the Action Agencies' level of effort and the SBUs achieved since 2007-2012. As Mr. Olney points out (2015 Olney Second Decl. at ¶¶ 11 & 12), the numbers used in this figure differ from those in 2014 NOAA C33622. For the purpose of this reply declaration, NMFS asked the Action Agencies to explain this discrepancy and to provide: (1) the actual numbers of SBUs they achieved during 2013 and 2014 and (2) the number they now expect to achieve during 2015. I have attached their response as Exhibit 1 to this declaration. Using the information in Table 1 in Attachment A to Exhibit 1, I have re-plotted the cumulative numbers of SBUs the Action Agencies achieved by year during 2010 through 2014 and their expected SBUs for 2015 in Figure 1a (below). I have also plotted the SBUs achieved during each year in Figure 1b to show that the pace of restoration is not even from year to year because, as the Action Agencies explain in Exhibit 1, some years require that they spend more time on feasibility and design while other years are weighted toward construction. Despite this year-to-year variation, the actual on-the-ground SBU numbers show clear evidence of a ramp-up during 2010-2014.

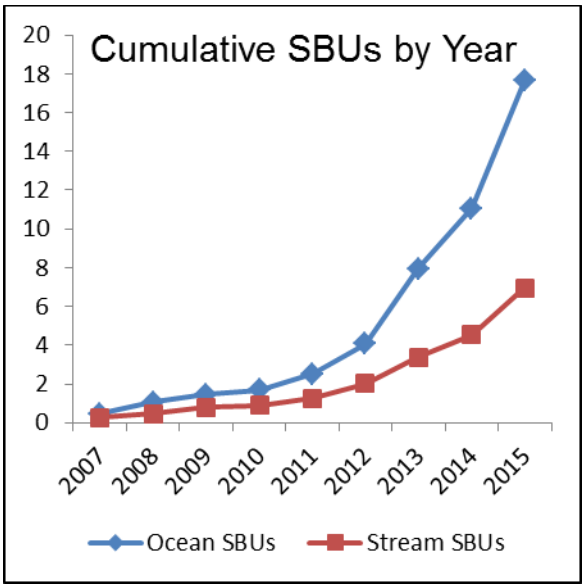


Figure 1a. Cumulative number of SBUs for 2007-2015. SBUs through 2014 are the actual numbers achieved; SBUs for 2015 are based on projects scheduled for completion through the end of the 2015 calendar year. SBUs for this figure were provided by the Action Agencies (Exhibit 1).

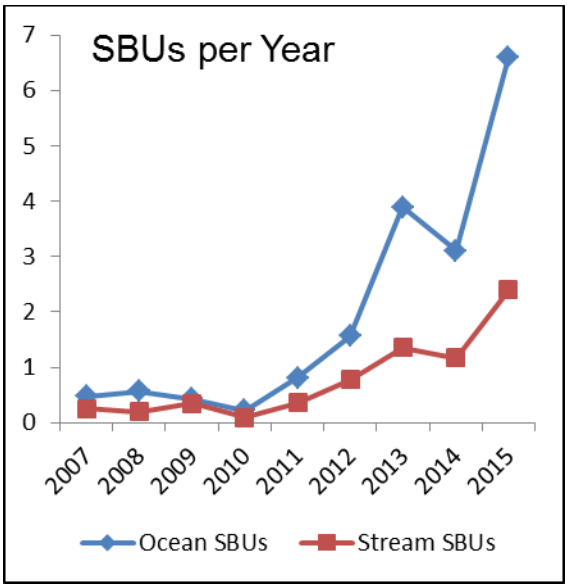


Figure 1b. Number of SBUs per year using the data in Figure 1a.

5. Given the clear trend toward achieving increasing numbers of SBUs over this period, it is more important to discuss Mr. Olney's concern that the Action Agencies would need to achieve about 30% more SBUs each year from 2016 through 2018 than they are projected to achieve for 2007-2015. [2015 Olney Second Decl. ¶13]. Based on this statement and his discussion of project implementation in his first declaration (2014 Olney SJ Decl. ¶¶ 25-29), Mr. Olney appears to think this is an unreasonable expectation, but based on my knowledge of the Action Agencies' implementation program, I disagree. The Action Agencies assembled a portfolio of potential estuary habitat projects in 2012. [See "Prioritization" in 2014 NOAA B47:3551-3553] Some of these projects have moved through feasibility studies, design, and permitting relatively quickly and have already been implemented while others need longer development periods. In addition, some will not be implemented and new projects have been found (Exhibit 1). Under

these circumstances, it makes sense that the Action Agencies would achieve the largest number of SBUs per year in the last few years of implementation. This is certainly true of the project called "Large Dike Breach-Reach E," which is projected to achieve 31 ocean- and 11 stream-type SBUs based on an ERTG preliminary score (2014 NOAA C33622; see Row 103 on the tab labeled "Updated per CRead(BPA)"; see also ERTG preliminary scores for Option 2 in 2014 NOAA C20156). The Action Agencies began to develop this project in 2012, but due to its complexity (very large size, multiple landowners, and significant design and planning requirements), it is reasonable to expect implementation later in the BiOp period.

6. The bottom line is that NMFS expects the Action Agencies to meet the RPA's estuary habitat performance standards by 2018. They have affirmed their commitment to doing so in their 2014-2018 Implementation Plan (2014 NOAA B48:4217) and Records of Decision (2014 Corps 1:1-11; 2014 BPA A1:15-25, 32). [*See* also Exhibit 1]. They have assembled a portfolio of projects and a process for replacing lost SBUs for any that prove infeasible. The projects in their portfolio are working their way through feasibility studies, design, permitting, and implementation. The process the Action Agencies established during their "transition period" (2010-2012) has allowed them to ramp up their efforts across the term of the BiOp so that they can achieve the estuary habitat program's performance standards by 2018.

7. **NMFS demonstrated the adequacy of the Action Agencies' plan to meet the estuary habitat program's performance standards in its 2014 BiOp and Administrative Record.** Mr. Olney references statements in his prior declaration that "[t]he 2014 BiOp does not discuss in any detail the feasibility of these projects or any potential funding issues but the 2014 BiOp does say that if any of these projects prove infeasible, the action agencies 'will implement others that collectively contribute an equivalent number of SBUs.' … NOAA does not actually describe

any potential substitute projects or explain where they would occur or its basis for concluding that they are available and can be implemented." [2014 Olney Decl. ¶ 27]. I addressed the level of detail regarding project feasibility that was available to NMFS during consultation in my prior declaration (2015 Krasnow Decl. ¶ 35). I also pointed to the ERTG SBU reports in ¶ 35 of my prior declaration [2014 NOAA C33150 and C33154] and to a spreadsheet that shows the portfolio of projects the Action Agencies had assembled as of December 2013 to meet the performance standards. [2014 NOAA C33622]. NMFS determined that this information demonstrated feasibility.

8. With respect to replacing projects that prove infeasible, the Action Agencies' implementation partners are continually looking for new project opportunities. This provides the Action Agencies with a pipeline of replacement projects to draw upon as needed to meet the BiOp's estuary habitat performance standards by 2018 (Exhibit 1). The Action Agencies completed a "new" project (Multnomah and Wahkeena Creeks at the Benson Lake Site) in 2014 and are slated to implement two more (Batwater Station and Sauvie Island North Unit—Phase 3) this year. [*See* Table 2d in Exhibit 1]. From NMFS's point of view, "replacement" projects are not different from those presented in the Action Agencies' 2013 Comprehensive Evaluation and 2014-2018 Implementation Plan. [2014 NOAA B47:4022-32 and B48:4339-80].

9. **The ERTG's work has moved the RPA Estuary Habitat Program beyond the strategy laid out in NMFS's Estuary Module**. On the one hand, Mr. Olney says that because the Estuary Module was supposed to be used for planning purposes, it is not the proper basis for assigning specific survival estimates to mitigate effects of the FCRPS. [2014 Olney Decl. at ¶20; 2015 Olney Second Decl. at ¶ 6]. On the other hand, he faults NMFS for not using the module as a rigid standard against which to evaluate the Action Agencies' implementation of the estuary

habitat program. As I explained in my prior declaration, NMFS intended that the ERTG would modify the approach used by the 2006 remand collaboration Habitat Workgroup to estimate survival improvements. [2015 Krasnow Decl. at ¶ 9]. When the ERTG members evaluated the Habitat Workgroup's method as reported in Appendix D to the 2007 CA (2008 NOAA S.47), they found that some management actions (i.e., CRE-1, restoring riparian areas, and CRE-15, removing invasive vegetation) were overvalued and some (CRE-9, restoring off-channel habitat, and CRE-10, breaching or lowering dikes and levees) were undervalued. The ERTG adjusted the SBUs assigned to these actions by creating weighting factors. They also tuned the scoring process to the habitat features and restoration design at each site through their scoring criteria. NMFS supports the ERTG's "SBU method" (also called the ERTG SBU calculator) because it applies the best available scientific information to the expert judgment method used in the Estuary Module. For CRE-1, CRE-9, CRE-10, and CRE-15, the management actions used in the RPA estuary habitat program, NMFS described the Estuary Module's Survival Improvement Targets in Table 5-5 [2014 NOAA B296:31691-2] with the phrase "Estimate is unsupported in the literature." [Table B-1, *Id.*:31810-12]. This is why the ERTG's weighting factors are so important—they adjust the expected survival benefits that each type of management action can support with estimates from the scientific literature.

10. The manner in which the ERTG's weighting factors have reallocated SBUs among management actions and increased the SBUs the Action Agencies can achieve through CRE-9 and CRE-10 is easy to show by walking through the equation used in the ERTG SBU calculator (Figure 2).

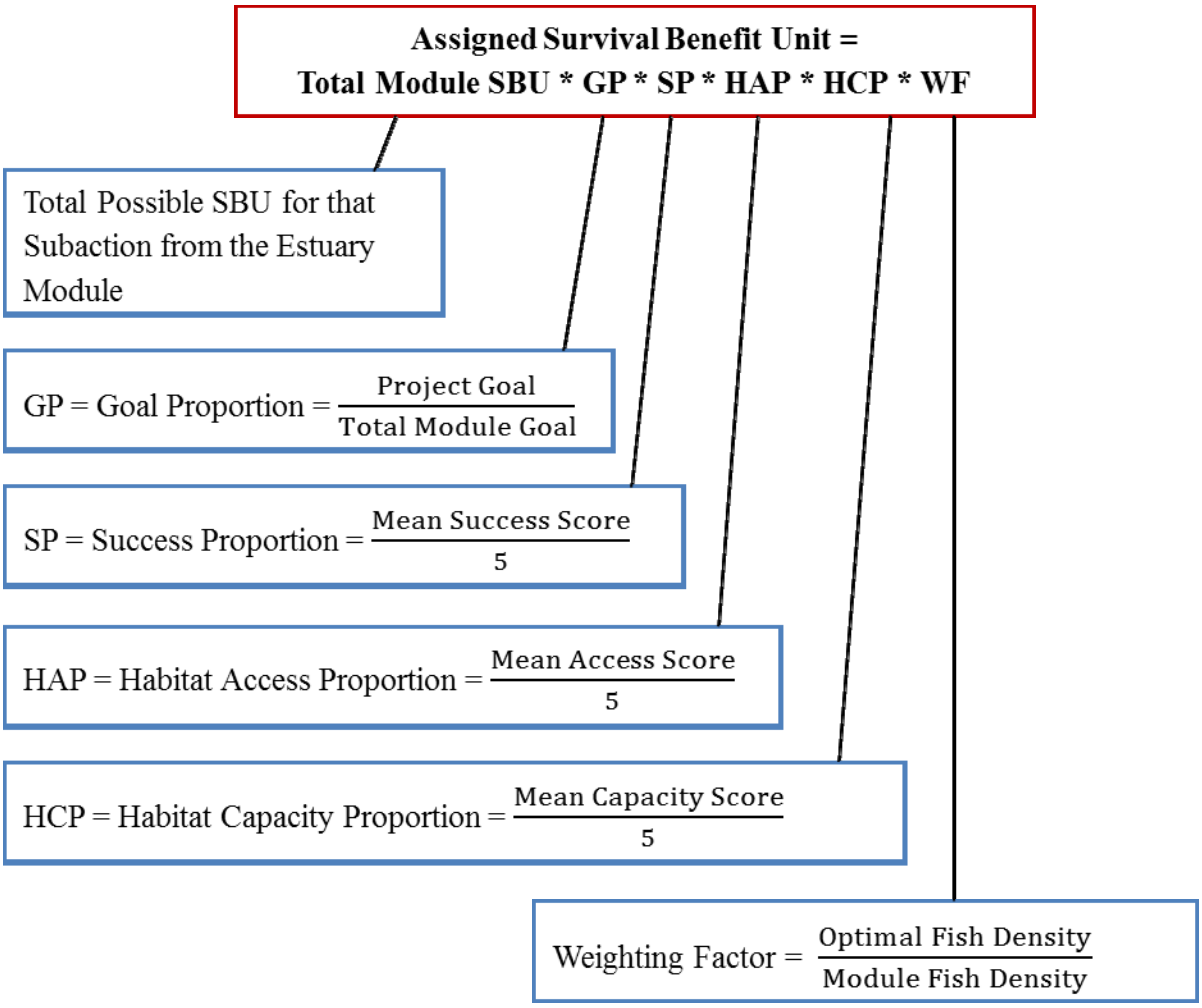


Figure 2. The equation used in the ERTG's SBU calculator. [Appendix G.1 in the 2014 BiOp; 2014 Corps 4:1148].

11. To begin, each estuary habitat project makes use of several management subactions (e.g., subactions 1-4 for CRE-1 in Table 5-6 of the 2011 Estuary Module [2014 NOAA B296:31696]). For example, at any given site, some mileage may be treated with CRE 1.4, restore riparian areas, but this is combined with some acreage treated with CRE-9.4, restore off-channel habitat, and/or CRE-10.1, breach or lower dikes and levees. The calculator provides an SBU score for each subaction used at the site and sums these to provide the ocean- and stream-type SBUs for the project. [2014 NOAA C34128].

12. The equation used in the calculator starts with the "Total Module SBUs" (i.e., the term labeled "Total Possible SBU for that Subaction from the Estuary Module" in Figure 2) (from Table 2 in Attachment D-1, Appendix D, in 2008 NOAA S.47). The total number of SBUs possible for that subaction is multiplied by the "Goal Proportion" (the term labeled "GP" in Figure 2), the miles or acres that will be improved at a site divided by the corresponding mileage or acreage goal in the Estuary Module.

13. The next three terms in the calculator are the average scores among the five ERTG members for a project's success, access, and capacity, labeled "SP," "HAP," and "HCP," respectively, in Figure 2. The ERTG's "(certainty of) success" scores consider the degree to which the outcome will be affected by the types of factors (landscape and ecological) the ERTG described in its "uncertainties" document. [2014 NOAA B110]. Their scores for "access" appraise the ability of juvenile salmonids to benefit from the habitat's increased capacity by allowing fish or prey to move between the mainstem and new or restored side channels or across a breach in a dike or levee. Their "capacity" scores consider a site's ability to create habitat attributes that promote foraging, growth, growth efficiency, and/or decreased mortality. Each ERTG member gives a proposed project a score between one and five for each of the three scoring criteria. [2014 BiOp, pg. 327]. Their scores are averaged and then divided by five to create a proportion for each criterion (i.e., the average score is expressed as a proportion of the maximum possible score). The three proportions are multiplied by each other and by the "Total Module SBUs" and the "Goal Proportion" (Figure 2). That is, the number of SBUs for a subaction that a given project receives depends not just on information from the Estuary Module, but on the details specific to the site and project design, which the sponsors have presented in

their ERTG template and shown to the ERTG during a site visit and subsequent question and answer period. [*See* 2014 NOAA C32615 and C32619]

14. The calculator then applies a weighting factor to the SBU score for each subaction (the last term in Figure 2), which is based on salmonid density data from the scientific literature —the number of juvenile salmonids that a mile or acre of habitat improvement can support. The ERTG applied weighting factors of less than one for CRE-1 (restore riparian areas) and CRE-15 (remove invasive vegetation) and weighting factors greater than one for CRE-9 (restore off-channel habitat) and CRE-10 (breach or lower dikes and levees). A weighting factor less than one reduces the number of SBUs possible for a given subaction and a weighting factor greater than one increases the number of SBUs possible. Thus, the ERTG's weighting factors reallocate SBUs among subactions. [2014 NOAA C28448:242117]. And this is relevant to the ISAB's statement:

> It is stated on page 4 of ERTG 2011-01 ("Feedback on Inputs to the Calculator to Assign Survival Benefit Units") that "weighting does not change the number of SBU possible. It only reallocates SBU among subactions." However, it seems that the overall effect of weighting on possible SBU will depend on the balance of weights <1 and >1; if all estimates of fish density in the Estuary Module were greater than the corresponding estimates of optimal density (from the ERTG), then all weights would be <1 and the total number of SBU possible would be reduced accordingly.

[2014 Corps 3671:135254].

Because of the sponsors' emphasis on management actions CRE-9.4 (restore off-channel habitat; weighting factor = 16.7) and CRE-10.1 (breach or lower dikes and levees; weighting factor = 6.25), the weighting factors are overwhelmingly greater than one and the total number of SBUs possible for these projects has increased accordingly. [*See* ¶¶ 11-12 in my prior declaration].

15. Mr. Olney's statement that "NOAA has now 'allocated' from one third (6% for stream-type fish) to more than three-quarters (17% for ocean-type fish) of the total 20% survival improvement possible from implementation of all 23 elements in the Estuary Module to just 4 of

the 23 elements" (2015 Olney Second Decl. at ¶ 32) shows that he still considers the Estuary Module as the operative standard for the RPA's estuary habitat program, ignoring the ERTG's adjustments to the SBU scoring process. As I explain above, the ERTG's SBU calculator begins with estimates of the total possible SBUs and the miles or acres that would be restored to reach each goal, both derived from the Estuary Module. However, the SBU scores are made specific to each site through the ERTG's scores for success, access, and capacity and then increased (CRE-9 and CRE-10) or decreased (CRE-1 and CRE-15) compared to those in the Estuary Module by the weighting factors. As the ISAB said, "[t]he soundness of the final SBU estimate for each proposed project will depend primarily on the quality of the estimates of total possible SBUs identified in the Estuary Module (NMFS 2011)." [2014 Corps 3671:135254]. After examining the estimates of "total SBUs possible" from NMFS's Estuary Module, the ERTG adjusted them to conform to the densities of juvenile salmonids that can be supported by each type of habitat improvement action through the use of weighting factors, thereby improving the soundness of the final SBU estimate for each project.

16. **The ERTG SBU calculator applies the same weighting factors to ocean-type juveniles (primarily Snake River fall Chinook salmon) and stream-type juveniles such as Snake River steelhead and spring/summer Chinook.** Mr. Olney cites a statement in the 2014 BiOp to state that "the weighting factors do not apply to stream-type juveniles like Snake River steelhead and spring/summer Chinook in any event." [2015 Olney Second Decl., ¶ 18]. However, he misquotes the 2014 BiOp and omits the footnote to that sentence (*see* Footnote 113, 2014 BiOp, p. 327), which reads: "The ERTG used the same weighting factor for ocean- and stream-type fish. A separate adjustment for benefits to stream-type fish is made elsewhere in the calculator." The ocean/stream adjustment comes from the "Total Possible Survival Benefit Units

(by Subaction)" in Table 2 to Attachment D-1, Appendix D in the Action Agencies' 2007 Comprehensive Analysis [2008 NOAA S.47]. This is where the life history differences between ocean- and stream-type fish are taken into account in the calculator, affecting the SBU scores. The smaller ocean-type juveniles spend more time rearing in the estuary than the more mature stream-type fish.

17. **The 2011 revisions to the Estuary Module demonstrate that NMFS intends the recovery planning document to remain responsive to new scientific information, whether developed by the ERTG, the Action Agencies' RME program, or other estuarine scientists.** Mr. Olney recognizes that NMFS updated the Estuary Module in 2011 and made some adjustments to CRE-9 and other action elements. However, he states that "[t]hese relatively small adjustments within the Estuary Module process are about one-twentieth the size of the increase—some 40 additional SBUs (from 45 SBUs to nearly 85 SBUs) that the action agencies and NOAA are now predicting from estuary habitat actions for ocean-type fish." [2015 Olney Second Decl. at ¶ 19]. As I described in my prior declaration, the effect of the ERTG's weighting factors was the most significant change to the scoring process, more significant than the addition of a "subaction 4" to CRE-9 (Restore degraded off-channel habitat) in NMFS's 2011 Estuary Module. [2015 Krasnow Decl. at ¶ 11 and in Footnote 7 to ¶ 16]. My point about the change to CRE-9 was that NMFS intended its recovery planning documents to be responsive to new scientific and technical information. If and when NMFS revises the Estuary Module, I expect it will consider the information developed through the ERTG process as well as any additional scientific and technical information relevant to improving the viability of Columbia basin salmonids through estuary habitat.

18. **It is reasonable for NMFS to expect the Action Agencies to meet the BiOp's survival improvements for estuary habitat without implementing RPA Action 38 (the piling and pile dike removal program).** Mr. Olney continues to assert that the Action Agencies cannot achieve the 9% survival improvement for ocean- and 6% for stream-type fish without implementing RPA Action 38 because that strategy would not be consistent with Table 5-5 in NMFS's Estuary Module. [2015 Olney Second Decl. at ¶¶ 20-21]. As I discuss in ¶ 9, above, NMFS did not intend the Estuary Module to be used as a rigid standard for the Action Agencies' RPA estuary habitat improvement program, thereby rejecting opportunities for improvement based on relevant scientific information. I included the following text from the Estuary Module in my prior declaration to emphasize this point: "if a certain action were implemented partially or not at all, the potential 20 percent gain in the number of wild, ESA-listed juveniles leaving the estuary and plume could not be achieved *unless other actions were implemented to a greater extent than envisioned in the module,* to compensate." (emphasis added) [2015 Krasnow declaration at ¶37, quoting from 2014 NOAA B296:31690]. Mr. Olney now tries to put this language from the Estuary Module "in context" by referencing the mileage and acreage targets from the Module's Table 5-6. [2014 NOAA B296:31696-718]. However, his effort is misplaced because the effect of those targets, used in the "Goal Proportion" term in the ERTG SBU calculator, is modified (i.e., multiplied) by the ERTG's weighting factors (¶¶ 14-15, above). Improving upon the aspirational mileage and acreage targets in NMFS's Estuary Module, the ERTG's weighting factors are grounded in optimal fish densities per mile or acre. In the 2014 BiOp, NMFS confirmed that the ERTG's refinements to the Estuary Module's methods and assumptions were consistent with the best available scientific information and NMFS's expectations for RPA implementation. [2014 BiOp, pgs. 325-8].

19. NMFS took the weighting factors into account when it decided that the Action Agencies could make up the SBUs from CRE-8 (piling and pile dike removal program) with additional work under RPA Actions 36 and 37 [2014 BiOp, p. 341]. NMFS also relied on its understanding of the value of estuary habitat improvements to both ocean- and stream-type juvenile salmonids, including those from the Interior Columbia basin [2014 BiOp, pgs. 320-324]. It was NMFS's expert opinion that restoring off-channel habitats and reconnecting large tracts of the historical floodplain[1] were likely to achieve most of the 9% ocean- and 6% stream-type survival improvements required by the RPA, with lesser contributions from riparian restoration and removing invasives. As shown in the 2013 Comprehensive Evaluation and 2014-2018 Implementation Plan (2014 NOAA B47:4021-32 and 2014 NOAA B48:4338-80) and updated in Exhibit 1, the Action Agencies are able to identify specific projects to accomplish the RPA's survival improvement goals without relying on the piling removal program.

20. As Mr. Olney points out, uncertainties associated with the piling removal program were known to NMFS before it wrote the RPA (or the ERTG wrote its uncertainties document). [2015 Olney Second Decl. at ¶ 27]. However, this program appeared to the Remand Policy Workgroup, the Action Agencies, and NMFS to have the potential to be feasible and to warrant further study. NMFS was confident that the Action Agencies would either be able to implement the piling and pile dike removal program to benefit juvenile salmonids or replace it with other actions to achieve the needed survival benefits under the RPA's adaptive management approach. When the Corps thoroughly investigated the piling removal program, the feasibility study confirmed that the program was not likely to result in the desired benefits. Thus, NMFS recommended that the

[1] *See* pgs. 320-2 in NMFS's 2014 BiOp and ¶¶ 5-7 in my prior declaration for a description of the loss of historical floodplain function below Bonneville Dam and its effect on the viability of Columbia basin salmonids.

Action Agencies achieve the full SBUs required to meet the 9% ocean- and 6% stream-type performance standards using the types of projects possible under RPA Actions 36 and 37. [2014 BiOp, p. 341].

21. **The (certainty of) success factor in the ERTG's calculator reduces project SBU scores for unresolved uncertainties.** The success factor in the ERTG's calculator reduces project SBU scores for unresolved uncertainties. As I state in ¶¶ 24-26 in my previous declaration, the Action Agencies are actively conducting research and developing technical products to address the ERTG's uncertainties. Mr. Olney has responded by asking when this research will be completed and the uncertainties will be resolved. [2015 Olney Second Decl. at ¶ 28]. Some of the information from the Action Agencies' studies will be available to the ERTG in 2015 and 2016, but as I explain in ¶ 13 (above), the effects of ongoing uncertainties are also captured by the ERTG's scores for its success criterion, which reduce the SBUs accorded to a project. The ERTG has shown a keen interest in new research and observational findings, which it discusses with the sponsors while evaluating a project's design and considers during the scoring process.

22. **The Action Agencies are implementing RPA Actions 36 and 37 to achieve the BiOp's performance standards; the Estuary Module is a recovery plan with a broader program of actions.** As I explained in my prior declaration and in ¶ 9, above, the ERTG went beyond the Estuary Module's planning stage for recovery plans by creating its weighting factors, which grounded the Module's estimates of survival benefits for certain types of management actions in published fish densities—the numbers of juvenile salmonids that each type of habitat improvement can support per unit mile or acre. [2014 Corps 4:1147-8]. By doing so, the ERTG increased the survival benefits of CRE-9 and CRE-10 for both ocean- and stream-type fish

beyond those in Table 5-5 of the Estuary Module and decreased the benefits of CRE-1 and CRE-15. Thus, under the ERTG's updates to the program through its SBU calculator, the Estuary Module's assumption that the survival of juvenile salmonids could be increased by 20% by implementing all 23 management actions to a reasonable degree does not limit the Action Agencies' ability to increase survival by 9% for ocean- and 6% for stream-type fish through the design and construction of habitat improvement projects. It should be noted that, despite the fact that the Action Agencies' now expect to achieve about 85 SBUs for ocean-type fish (i.e., Snake River fall Chinook), equivalent to a 17% survival improvement, only 9% will be used as mitigation for effects of the FCRPS.

23. **NMFS addressed the effects of FCRPS flow management on Interior Columbia basin species in RPA Actions 4-15, which with the estuary habitat improvement actions 36 and 37, are integral to the RPA for the FCRPS.** In his 2015 Second Decl. (¶ 30), Mr. Olney quotes NMFS's 2014 BiOp, p. 475, to represent that NOAA assumed "these habitat improvement projects are mitigating for the negative effects of RPA flow management operations on estuary habitat used by these species for rearing and recovery." That quoted language applies to salmonids that are not the subject of the RPA and thus that sentence does not represent the point that Mr. Olney intends. The sentence that he quotes is in Section 4.2 of the 2014 BiOp, titled "Determinations for *Lower* Columbia Basin Salmon and Steelhead." (emphasis added). The six lower Columbia basin species are Columbia River chum, Lower Columbia River Chinook, Upper Willamette River Chinook, and Lower Columbia River coho salmon and Lower Columbia River and Upper Willamette River steelhead, whose entire or primary freshwater habitat is downriver of the FCRPS. In every FCRPS BiOp beginning in 2000, NMFS has concluded that the operation of the FCRPS is not likely to jeopardize any of the lower Columbia

basin salmonids or destroy or adversely modify their critical habitat. In the 2014 BiOp, NMFS considered whether any new information had changed its understanding of the effects of implementation of the RPA for Interior Columbia basin species on each lower river species' likelihood of survival and recovery or the functioning of the physical and biological features of critical habitat. In this context, NMFS concluded that the FCRPS estuary habitat improvement program was benefiting the lower river species by improving habitat they require for rearing and recovery. NMFS specifically addressed the effects of FCRPS flow management on listed salmonids from the Interior Columbia basin in RPA Actions 4-15. [*See* pgs. 3-18 in the RPA table to the 2008 BiOp]. The estuary habitat actions (36 and 37) are an integral part of an RPA that also addressed flow, spill, passage route, and predation to the extent needed to avoid jeopardy and the adverse modification of critical habitat. In this way, the RPA addresses the concerns raised by Mr. Olney and the ISAB.

24. **The ERTG's scores for access adequately capture the ISAB's point about flow effects for estuary habitat restoration sites.** Mr. Olney states "[t]he fact that the ERTG scoring criteria calculate a potential wetted area does not address the ISAB's point about flow effects or my broader point about whether all of the elements of the Estuary Module are being implemented to a reasonable extent as the Module assumed in developing its survival improvement targets." [2015 Olney Second Decl. at ¶ 31]. However, the ISAB's point about flow effects was embedded in a broad comment about considering estuary habitat improvements at the ecosystem scale. [2014 Corps 3671:135257-60]. The ISAB wrote:

> Of particular importance to the science of landscape ecology is pattern (landscape structure) and scale (both spatial and temporal), which need to correspond to the form and levels of mechanisms controlling processes of interest, for example, salmon survival. The processes identified in the ERTG Scoring Criteria apply primarily to local patterns and scales of potential (individual) projects brought to the ERTG for scoring whereas the pattern and scale of juvenile salmonid ecosystems encompass diverse habitats from

> freshwater tributaries to the coastal ocean for Chinook salmon and to the high seas (international waters of the Gulf of Alaska) for steelhead during the year of ocean entry (freshwater-ocean continuum; Simenstad and Cordell 2000).

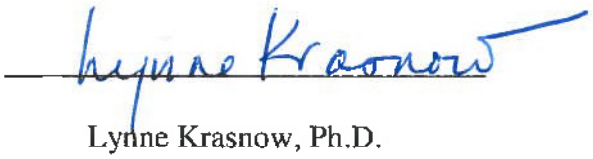
[2014 Corps 3671:135258].

As I explained in my prior declaration (2015 Krasnow Decl. at ¶¶ 27-29), the RPA's estuary habitat improvement program is able to address the goals of landscape planning through the Action Agencies' level of effort within and between reaches and as a way to restore the historical distribution of important habitat types. In addition, the effects of water releases, mainstem flows, and precipitation are adequately captured in the ERTG's access score for each site. Other factors affecting salmonid survival in the mainstem (e.g., flow; spill; passage route; and avian, fish, and bird predation) are addressed elsewhere in the RPA.

25. **NMFS expects the Action Agencies' implementation of RPA Actions 36 and 37, the estuary habitat improvement program, to meet the survival improvement performance standards by the end of the BiOp term.** As I described in my prior declaration, the Estuary Module laid out potential management actions to address the factors that limit survival in the lower Columbia River as a component of recovery plans addressing all life stages of the listed salmonids. The Module provided initial estimates of survival benefits for each management action and of the level of effort (miles or acres of improved habitat) that would be needed. As I show above, the ERTG applied the Module's plan for the estuary to the problem of scoring the survival benefits of specific habitat improvement projects using the best available scientific information. One of the outcomes of the ERTG's work is that the Action Agencies can achieve the RPA's performance standards for the estuary program (a 9% survival improvement for ocean-type fish and 6% for stream-type fish) by improving degraded off-channel habitat and breaching dikes and levees (i.e., without implementing RPA Action 38, the piling and pile dike

removal program). Finally, although the design and scoring processes for estuary habitat improvement projects take landscape planning into account at the site and reach scale rather than across the freshwater and estuarine portions of the life cycle, other factors affecting survival in the mainstem are addressed by the RPA as an integrated program.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 5, 2015, in Portland, Oregon.



Lynne Krasnow, Ph.D.

US Army Corps
of Engineers ®
Northwestern Division

May 1, 2015

Mr. Barry Thom, Deputy Regional Administrator
Northwest Region, National Marine Fisheries Service
1201 NE Lloyd Blvd Suite 1100
Portland, OR 97232

Dear Mr. Thom:

In the litigation challenging the 2014 Supplemental BiOp and the Action Agencies' related decision documents (U.S. District Court for the District of Oregon, Case 3:01-cv-00640-SI), plaintiffs question the Action Agencies'[1] implementation of estuary habitat restoration actions to achieve the objectives NOAA Fisheries relied on in reaching its conclusions. We want to update you with current information and to reaffirm our agencies' commitments to achieving the percent estuary survival improvements called for in the RPA.

As explained in the 2013 Comprehensive Evaluation (CE), the estuary habitat program has evolved significantly since the Action Agencies initiated consultation in 2007. Over the last seven years, the strategy, processes, and implementation have aligned to ensure the delivery of high-value projects. (CE Section 1, p. 73). The AAs have developed a targeted, collaborative approach to identify project opportunities that consider cost-benefit, social and technical complexities, and Survival Benefit Unit (SBU) assessment, which allows for improved coordination among restoration partners. (CE Section 2, p.182). As demonstrated over the course of the BiOp implementation period and by the scope of the current program, funding projects is not a limiting factor; and we have shifted the focus of our efforts to floodplain reconnections and wetland channel improvements that have a significant footprint in areas relatively close to the mainstem (CE Section 2, p. 182).

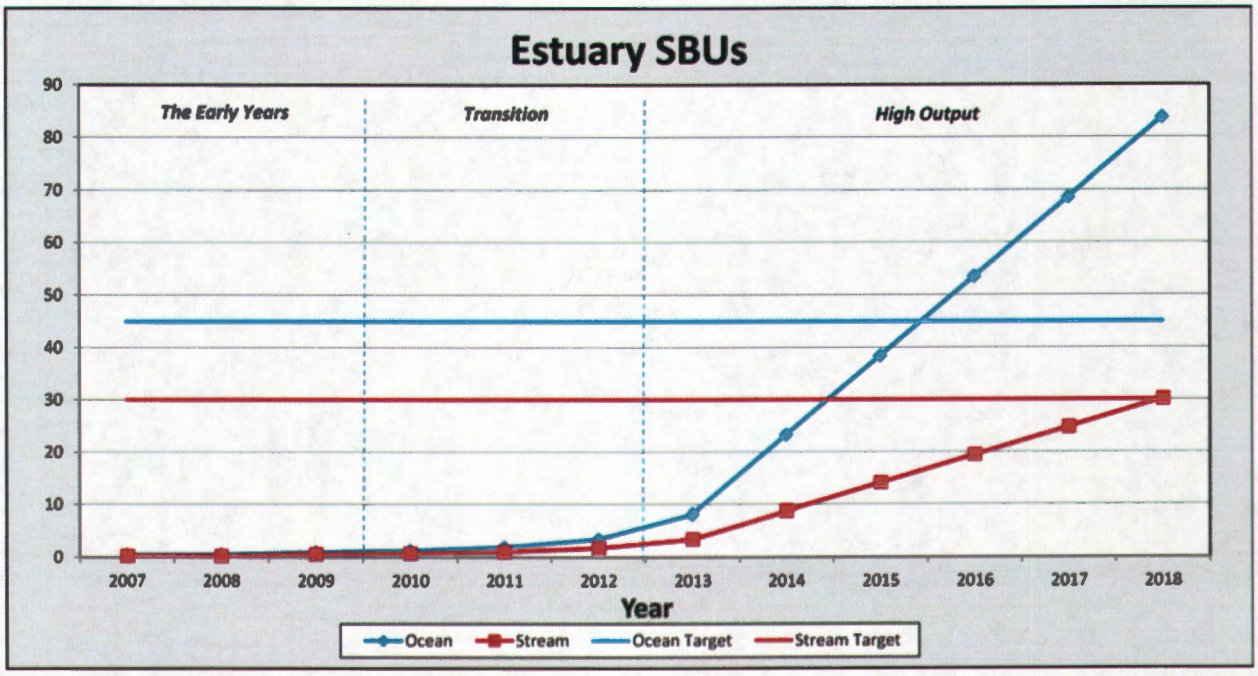
Through these efforts, the AAs are vigorously pursuing a portfolio of projects that we expect will yield the required number of SBUs under RPA Actions 36 and 37. (See Attachment A, Tables 2a-2e.) As stated in the AAs' decision documents and the 2014-2018 Implementation Plan (IP)[2],

[1] For estuary habitat actions, the U.S. Army Corps of Engineers and Bonneville Power Administration are the responsible Action Agencies.
[2] See 2014-2018 Implementation Plan (IP), p.61.

the Action Agencies are committed to implementing the actions contained in NOAA's 2008 Biological Opinion, as supplemented in 2010 and 2014, including a suite of projects that will collectively achieve the RPA's percent estuary habitat survival improvements.[3]

In the 2013 CE, the Action Agencies projected SBU implementation for the period 2014-2018 based on a portfolio of projects the AAs developed using the collaborative method described in Section 2 of the CE (p. 182). This methodology was initiated in 2012 with Lower Columbia Estuary Partnership (LCEP) and other project partners to identify, prioritize, and assign project opportunities forming the basis of out-year SBU projections. The prioritization process takes into account the factors of cost-benefit, social and technical complexities (*e.g.*, landowner willingness, presence of utilities, etc.), and SBU assessment. Thus, only projects that were deemed to have a reasonable likelihood of success and reasonable cost per SBU were included in the out-year projections. This process identified projects totaling 75 Ocean SBUs and 27 Stream SBUs. In early 2013, the Action Agencies depicted these projected SBUs in the CE using the following figure:

Figure 1. Average SBU Projections in the Action Agencies' 2013 Comprehensive Evaluation



(CE Section 2, p.180.) This figure was intended to display the average number of SBUs per year remaining for the 2014-2018 period (dividing the total SBUs by the total remaining years of the BiOp).[4]

[3] In addition to reporting on SBUs, the AAs provide information in our Annual Progress Reports demonstrating that we have protected and restored more than 6400 acres in the Columbia River estuary. See Attachment A, Figure 2.
[4] Averaging on an annual basis results in a straight line with a fixed slope and is not indicative of actual annual project implementation.

Actual project implementation fluctuates from year to year depending on a variety of factors such as size and complexity. In some years more time is spent on feasibility and design, while in other years more effort is directed at on the ground construction. These factors can significantly affect the SBUs produced from year to year. Attachment A, Table 1, identifies SBUs achieved each year since 2007.

An estuary habitat project that demonstrates why ramping up of SBU accomplishment is weighted toward the latter part of the BiOp period is Columbia Stock Ranch (CSR), a 550-acre property acquired with a permanent conservation easement. Since purchasing, project development tasks such as design and permitting considerations for modifying federally authorized levees are in motion to ensure construction before the end of the BiOp period. Another such project, Large Dike Breach-Reach E, which is nearly four times the acreage of CSR, requires significant real estate, financial planning, and permitting activities to allow for substantial dike breaching and floodplain inundation.[5] Large Dike Breach-Reach E will go through a similar process as CSR, including a permanent conservation easement, and has an estimated ERTG score of more than 30 Ocean and 10 Stream SBUs. Examples such as these demonstrate why it is not unexpected that the SBUs accomplished in 2013-2014 are below the projected average value, and the SBUs in the later years are expected to exceed the projected average value.

Furthermore, resiliency is built into the estuary habitat program to adapt to changing circumstances. With a large portfolio of projects, revising initial plans or discontinuing a project altogether is anticipated and planned for accordingly.[6] For instance, implementation partners are continually looking for new project opportunities for vetting through the collaborative evaluation and project ranking process. This provides the AAs with a pipeline of candidate projects of varying type and scope, including large and complex projects. The AAs draw upon this reserve of projects to ensure the estuary habitat portfolio includes a sufficient number of SBUs to meet the percent estuary survival improvements called for in the RPA.

Below are a few examples that illustrate the estuary program's resiliency to adaptively manage with changing circumstances and new information to ensure we remain on track to achieve sufficient SBUs:

1. The Sharnelle Fee project was originally planned for implementation in 2013, but delays in obtaining a Section 408[7] permit resulted in missing the 2013 field season. A Section

[5] As part of the project's ongoing development, monthly meetings are being held with landowner representatives to maintain clear communications, identify key decision points, and foster a collaborative atmosphere.

[6] For example, the AAs often work with private landowners on a voluntary basis, and changes in landowner support can impact a project's schedule and/or feasibility. But because the AAs fund local partners with strong relationships with landowners and local communities, including CREST, Columbia Land Trust, LCEP, Washington Department of Fish and Wildlife, and the Cowlitz Indian Tribe, community outreach is more effective, helping to ensure support for restoration projects.

[7] Section 14 of the Rivers and Harbors Act of 1899, codified in 33 USC 408, is commonly referred to as "Section 408"and authorizes the Secretary of Army, on recommendation of the Chief of Engineers of the U.S. Army Corps of Engineers, to grant permission to alter Corps projects, such as dikes or levees, to ensure public safety is protected from the proposed alteration.

408 permit was subsequently issued and the project was implemented successfully in 2014.

2. Sturgeon Lake was originally expected to generate a large number of SBUs, but ERTG classified the project as a Floodplain Lake, and the SBUs dropped substantially. Consequently, this project was no longer a priority project. The Corps subsequently identified additional cost share partners, and the project is now cost-effective and planned for implementation in 2017.

3. The expansion of projects on Sauvie Island is an example of the AAs' habitat program's success in adding projects as a result of developing relationships. Sauvie Island, North Unit Phases 1 and 2 were designed and implemented by the project sponsor (CREST) in 2013 & 2014, respectively. The success of Phases 1 and 2 encouraged the land manager, Oregon Department of Fish and Wildlife (ODFW), to partner with the AAs on a third phase of the project (which was not identified in the CE or IP). In addition, CREST is now working with ODFW to pursue four additional actions on other parts of the island that it manages. North Unit Phase 3 and the four additional actions are now on track to be completed by the end of the BiOp period. (See Attachment A, Tables 2d and 2e.)

These examples demonstrate not only that conditions change, but also the resiliency of the AAs' estuary habitat program. Changing conditions, such as those described above, can and do impact the actual *annual* delivery of SBUs; but the AAs have consistently drawn on the project pipeline described above to identify alternative projects with equivalent SBUs. (See Attachment A, Tables 2a-2e.)

The Action Agencies are fully committed to supporting the estuary habitat program, and as demonstrated over the course of the BiOp RPA implementation period, funding projects is not a limiting factor. With the maturation and evolution of the estuary habitat program, the expenses associated with achieving sufficient SBUs have increased over time. The Action Agencies have responded by working together to manage and allocate resources in a manner that optimizes available funding, and have also increased funding to achieve the requisite SBUs.[8]

In summary, while achieving SBUs varies from year to year, the overall implementation trend continues to increase significantly with the maturation of the program. The AAs are committed to continuing our productive approach for identifying additional projects, funding and implementing projects that will achieve the total estuary SBUs called for in the RPA, and funding RM&E to improve our scientific understanding of benefits those projects provide to fish.

[8] From inception of the estuary habitat program through 2006, the Action Agencies spent approximately $20 million on estuary habitat implementation and research, monitoring, and evaluation (RM&E) to ascertain functionality of the habitat projects and reduce scientific uncertainties associated with the estuary habitat program. From 2007-2014, the Action Agencies spent over $100 million on implementation and RM&E. For 2015, the AAs have spent and allocated a combined total of over $11 million. Funding for the estuary habitat program is not a limiting factor for fulfilling our commitments under the BiOp and RPA.

Please contact Lydia Grimm 503 320-3528 and Rock Peters 503 808-3723 if you have any questions.

David J. Ponganis, SES
Director, Programs
U.S. Army Corps of Engineers
Northwestern Division

F. Lorraine Bodi
Vice President, Environment, Fish & Wildlife
Bonneville Power Administration

Enclosure
Attachment A

Attachment A

Figure 2. Cumulative Summary of Estuary Acres of Floodplain Improved, 2007-2014

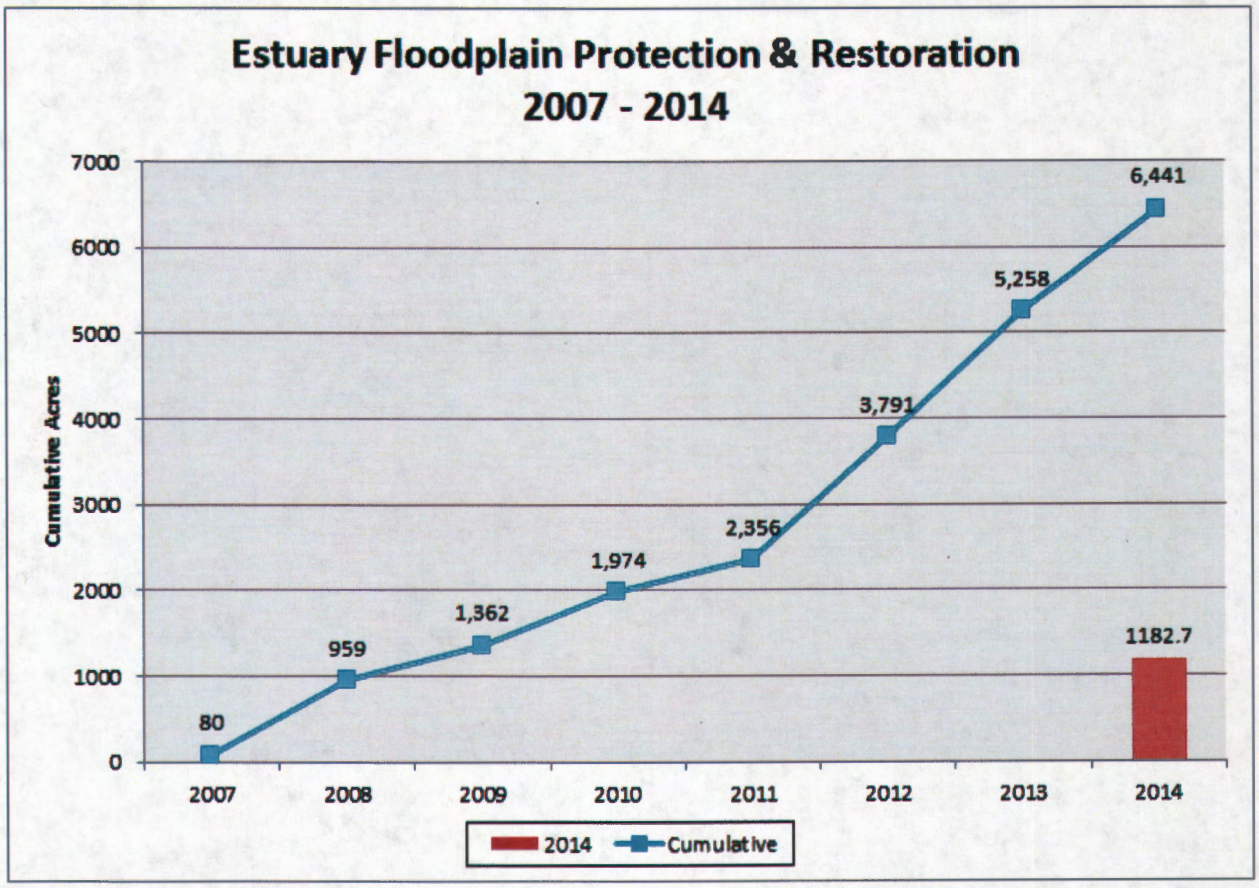


Table 1. Actual SBU Implementation, by Year, 2007-2014. Projected SBU Implementation during 2015.

Year	Ocean SBUs	Stream SBUs
2007 Complete	0.47	0.25
2008 Complete	0.57	0.20
2009 Complete	0.42	0.35
2010 Complete	0.22	0.09
2011 Complete	0.82	0.36
2012 Complete	1.56	0.77
2013 Complete	3.89	1.35
2014 Complete	3.10	1.17
2015 Projected	6.6	2.4
Total	**17.7**	**6.9**

Note: Since the CE was issued, there have been several minor retroactive adjustments to scores. These changes have been managed through the ERTG process. Specifically, a copying/pasting error occurred when ERTG scores for two specific projects were first entered into the database, and when this discrepancy was discovered, this led to small reductions in SBUs for Big Creek (2008) and Perkins Creek (2009). In a third project (Fort Columbia in 2011), the sponsor discovered that a subaction had been miscategorized and thereby undervalued, so the ERTG was asked to recalculate. This led to a small increase in SBUs. In the fourth and final project (Mirror Lake, two phases in 2008 and 2010, respectively), with more information, the total project SBUs were allocated more accurately between the two years (no change in overall SBUs for the project). As a result of these four retroactive adjustments, the sum total change in SBUs achieved for the period 2007-2012 increased slightly, from 3.93/O and 1.97/S to 4.06/O and 2.02/S.

Tables 2a – 2e. Current Estuary Project Portfolio as of May 2015

These tables collectively depict the entire suite of projects the AAs are currently pursuing to achieve BiOp commitments, including actions that have been added to the BiOp project portfolio since publication of the CE and IP. Table 2a provides an overview. Table 2b and Table 2c depict projects completed in 2013 and 2014, respectively. Table 2d depicts projects to be implemented in 2015. Finally, Table 2e lists the projects planned for the 2016-2018 period.

Note that projects where SBU values have been increased or decreased since publication (*e.g.*, due to project design changes) and new projects that have been added to the portfolio after publication are incorporated into the relevant year's table. The tables also indicate those projects for which the anticipated or actual completion date has changed.

These tables demonstrate how the AA project selection process accounts for the dynamic nature of a large ecosystem restoration program. New projects have been identified to replace SBUs that are lost when other projects have been delayed or abandoned as infeasible. The totals in Table 2a below show how the net effect of all these changes is a portfolio of projects that is expected collectively to achieve the RPA's estuary habitat survival benefit performance standards in RPA Actions 36 and 37.

Table 2a. Summary of Estuary Projects by Year, Including Changes Since the CE and IP

	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)
SUBTOTAL: Completed 2007-2012	4.1	2.0	4.1	2.0
SUBTOTAL: Completed 2013	3.3	1.2	3.9	1.4
SUBTOTAL: Completed 2014	3.8	1.5	3.1	1.2
SUBTOTAL: Implementation in 2015	4.5	1.5	6.6	2.4
SUBTOTAL: Planned 2016-2018	54.0	18.9	66.4	23.4
SUBTOTAL: Actions No Longer Pursued	14.6	5.4	0.0	0.0
TOTAL: 2007-2014 & Projected 2015-2018	**84.3**	**30.5**	**84.1**	**30.4**

Table 2b. Actions completed in 2013

Project	Listed in CE or IP	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)	Reason for score adjustment, if any	Status
Chinook Phase #1	CE/IP	-	-	0.15	0.06	part of restoration phase 2013 SBUs	completed 2013
Wallooskee Youngs Phase #1	CE/IP	-	-	0.11	0.04	part of restoration phase 2013 SBUs	completed 2013
Gnat Creek Phase #2	CE	0.43	0.13	0.43	0.13	no change	completed 2013
Grays Bay-Kandoll Farm Phase #2	CE	1.06	0.36	1.25	0.42	Revised ERTG Final 9/3/13	completed 2013
Grays Bay-Matteson Road (Grays Confluence) Phase #1	CE/IP	-	-	0.10	0.04	part of restoration phase 2013 SBUs	completed 2013
Skamokowa Creek	CE	0.08	0.05	0.08	0.05	no change	completed 2013
Kerry Island Phase #1	CE/IP	-	-	0.08	0.03	part of restoration phase 2013 SBUs	completed 2013
LA (Louisiana) Swamp	CE	0.14	0.05	0.14	0.05	no change	completed 2013
Dibblee Point	CE	0.02	0.01	0.02	0.01	no change	completed 2013
Sauvie Island NU Phase #1	CE	1.00	0.32	0.92	0.29	Adjusted from Prelim to ERTG Final	completed 2013
Honeyman Creek	CE	0.10	0.04	0.10	0.04	no change	completed 2013
Sandy River Dam Removal	CE	0.44	0.16	0.44	0.16	no change	completed 2013
Horsetail Creek	CE	0.06	0.03	0.06	0.06	no change	completed 2013
SUBTOTAL: Completed 2013		**3.3**	**1.2**	**3.9**	**1.4**		

Table 2c. Actions completed in 2014

Project	Listed in CE or IP	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)	Reason for score adjustment, if any	Status
Chinook Phase #2	CE/IP	0.76	0.32	0.69	0.36	Adjusted from Prelim to ERTG Final	completed 2014
Sharnelle Fee	CE	0.25	0.10	0.25	0.10	no change	completed 2014
Grays Bay-Deep River (Brix Bay) Phase #2	IP	-	-	0.02	0.01	part of restoration phase 2014 SBUs	completed 2014
Julia Butler Hansen NWR-Steamboat Slough	CE	0.80	0.3	0.38	0.14	Adjusted from Prelim to ERTG Final	completed 2014
Karlson Island	CE/IP	0.52	0.17	0.51	0.16	Adjusted from Prelim to ERTG Final	completed 2014
Sauvie Island NU Phase #2	IP	1.09	0.35	1.06	0.34	Adjusted from Prelim to ERTG Final	completed 2014
Thousand Acres, Sandy River Delta	CE/IP	0.36	0.21	0.14	0.05	Adjusted from Prelim to ERTG Final	completed 2014
Multnomah & Wahkeena Creeks- Benson Lake Site	new	0	0	0.04	0.02	new action added since IP	completed 2014
SUBTOTAL: Completed 2014		**3.8**	**1.5**	**3.1**	**1.2**		

Table 2d. Actions to be implemented in 2015

Project	Listed in CE or IP	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)	Reason for score adjustment, if any	Status
Skipanon 8th St. Dam	CE/IP	1.31	0.4	0.91	0.36	Adjusted from Prelim to ERTG Final	Implementation occurring in 2015
Wallooskee Youngs Phase #2	CE/IP	2.07	0.71	2.13	0.76	Adjusted from ERTG Prelim to ERTG Final	Implementation occurring in 2015
Crooked Creek Upstream Phase #1	IP	-	-	0.01	0.01	part of restoration phase 2015 SBUs	implementation occurring in 2015
Grays Bay-Deep River (Brix Bay) Phase #3	IP	-	-	0.02	0.01	part of restoration phase 2015 SBUs	implementation occurring in 2015
Elochoman Slough Phase #3	CE/IP	0.34	0.15	0.73	0.31	Adjusted from Prelim to ERTG Final	Implementation occurring in 2015
Lewis River East Fork-Site 43	IP	0.80	0.25	1.49	0.47	Adjusted from Prelim to ERTG Final; expanded footprint	Implementation occurring in 2015
Buckmire Slough Phase #1	IP	-	-	0.68	0.27	Adjusted from Prelim to ERTG prelim; expanded footprint; split into phases	implementation occurring in 2015
Batwater Station	new	0	0	0.26	0.08	new action added since IP	implementation occurring in 2015
Sauvie Island, NU Phase #3	new	0	0	0.38	0.13	new action added since IP	implementation occurring in 2015
SUBTOTAL: Implemented in 2015		**4.5**	**1.5**	**6.6**	**2.4**		

Table 2e. Actions planned for 2016-2018

Project	Listed in CE or IP	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)	Reason for score adjustment, if any	Status
Lewis & Clark River Upper	IP	0.21	0.07	0.21	0.07	no change	planned 2016-2018
Port of Astoria (Skipanon)	IP	0.30	0.10	0.30	0.10	no change	planned 2016-2018
Port of Astoria Phase #2	IP	0.22	0.07	0.22	0.07	no change	planned 2016-2018
Trestle Bay	IP	2.07	0.64	1.60	0.49	Adjusted from Prelim to ERTG Final	planned 2016-2018
Wallacut Phase #2	CE/IP	0.30	0.10	0.29	0.10	Adjusted from Prelim to ERTG Final	planned 2016-2018
Walluski Bottomlands	IP	0.14	0.05	0.27	0.09	revised prelim score	planned 2016-2018
Youngs Bay/River	IP	3.04	1.00	3.32	1.22	Adjusted from Prelim to ERTG Prelim	planned 2016-2018
Crooked Creek Upstream Phase #2	IP	0.24	0.08	1.05	0.34	expanded footprint	planned 2016-2018
Grays Bay-Deep River (Brix Bay) Phase #4	IP	0.87	0.37	0.85	0.37	expanded footprint	planned 2016-2018
Grays Bay-Matteson Road (Grays Confluence) Phase #2	CE/IP	1.01	0.34	3.65	1.21	expanded footprint	planned 2016-2018
Svensen Island-Cathlamet Bay	IP	2.17	0.78	2.75	0.94	Adjusted from Prelim to ERTG prelim	planned 2016-2018
Kerry Island Phase #2	CE/IP	0.76	0.25	1.11	0.37	Adjusted from Prelim to ERTG Final	planned 2016-2018
Westport Slough, USFWS	IP	0.21	0.06	0.21	0.06	no change	planned 2016-2018
Clatskanie Levee Setback	IP	1.36	0.43	0.99	0.34	Adjusted from Prelim to ERTG prelim	planned 2016-2018
Columbia Stock Ranch Phase #2	CE/IP	4.44	1.43	4.44	1.43	no change	planned 2016-2018
Large Dike Breach Reach E	IP	31.00	11.08	35.21	12.66	revised scope	planned 2016-2018
Buckmire Slough Phase #2	IP	1.29	0.40	2.62	0.94	Adjusted from Prelim to ERTG prelim; expanded footprint; split into phases	planned 2016-2018
Scappoose Landing	IP	0.08	0.03	0.08	0.03	no change	planned 2016-2018
Steigerwald NWR	CE/IP	4.31	1.58	4.31	1.58	no change	planned 2016-2018

Project	Listed in CE or IP	2013 Projected SBUs from CE/IP (Ocean)	2013 Projected SBUs from CE/IP (Stream)	Revised 2015 SBUs (Ocean)	Revised 2015 SBUs (Stream)	Reason for score adjustment, if any	Status
Clatsop County Fairgrounds	new	0	0	0.25	0.08	new action added since IP	planned 2016-2018
Erickson Dike Slough	new	0	0	0.67	0.21	new action added since IP	planned 2016-2018
Carr Slough	new	0	0	0.26	0.12	new action added since IP	planned 2016-2018
Crane Slough	new	0	0	0.19	0.06	new action added since IP	planned 2016-2018
Dairy Creek - Sturgeon Lake (1135)	new	0	0	0.34	0.14	new action added since IP	planned 2016-2018
Domeyer Wetland	new	0	0	0.32	0.10	new action added since IP	planned 2016-2018
Duck Lake	new	0	0	0.18	0.06	new action added since IP	planned 2016-2018
John R Palensky	new	0	0	0.48	0.15	new action added since IP	planned 2016-2018
Willow Bar	new	0	0	0.21	0.06	new action added since IP	planned 2016-2018
SUBTOTAL: Planned for 2016-2018		**54.0**	**18.9**	**66.4**	**23.4**		